COLLEGE OF AGRICULTURE
UNIVERSITY OF WISCONSIN
MADISON 6, WISCONSIN

DEPARTMENT OF BIOCHEMISTRY

September 26, 1960

Professor Joshua Lederberg
Genetics Department
School of Medicine
Stanford University
Palo Alto, California

Dear Joshua:

I thought you might be interested in seeing the enclosed electron photomicrograph of a thin section through a group of E. coli cells that was taken by my graduate student, Mr. Donald Slagel. Don has been studying the effect of polylysine upon the morphology of bacteria. He used a culture E. coli obtained from Prof. P. Kaesberg's laboratory which we understand was the same as used by Kellenberger et al. and designated as BTCC 122 strain C (F-). In his paper (J. Bact. 59, 468 (1955)) Kellenberger shows that this strain recombined with strain W1294 of K12, (K12S(F+).

The electron micrograph was from an untreated control culture of the C strain alone. It shows: (a) a longitudinal section through a single cell with the cell wall, cytoplasmic membrane, cytoplasma containing mitrochondria around the outside and a nuclear vacuole in the center. The nuclear vacuole is a network structure of thin strands probably nucleic acids. In addition there are: (b) several cells in which the section was cut at right angles to the long axis. Two of these are joined by a fairly thick strand through which it would seem that genetic material might easily pass. At the point of connection the cell wall is absent and the cytoplasmic membrane seems to have largely disappeared. We wonder if by chance Don could have cut through a mating pair of bacteria and if this could be a photography of the connection through which genetic material is transmitted. We think that this picture may be much more convincing than the shadowed preparations of Dr. T. F. Anderson where it is difficult to decide if the connecting strands that he shows could be artifacts produced by the chance position of two bacteria and the shadowing technic.

We would appreciate your comments about this picture, particularly what you think the connecting strand may represent and if you think the picture is worthy of publication. Perhaps I should add that the culture forms chains of rods when it grows and that the sections through dividing cells look quite different than the pair shown here.

With best regards,

Sincerely yours,

Mark A. Stahmann

Mark A. Stahmann

dle